What Is Claimed Is

- 1. The Contact-type Micro Piezoresistive Shear-Stress Sensor comprising Si substrate, Sensing diaphrag, Protective Membrane and Flange, specially includes two X-shape piezoresistors, each with flanges at four ends, as the primary sensing units.
- 2. A Contact-type Micro Piezoresistive Shear-Stress Sensor according claim 1, these sensing units consist vertically of: (from bottom to top)
 - -Si substrate:
 - -Sensing diaphragm: formed into the etched cavities at preset locations on the Si substrate;
 - -Protective Membrane: formed on the above-said membranes;
 - -Flange: formed via etching technology at the preset positions on the said Membranes as Shear-Stress sensing components.
- 3. A Contact-type Micro Piezoresistive Shear-Stress Sensor according claim 1,these material of sensing units consist vertically of: (from bottom to top)
 - -Si substrate: made of High Doping semi-conductor piezoresistive material;
 - -Protective Membrane: made of SiO₂, Si₃N₄ semi-conductor protective material
 - -Flange: made of the same material as the above-mentioned Protective Membrane.

- 4. A Contact-type Micro Piezoresistive Shear-Stress Sensor according claim 1, the cavity structure of the Contact-type Micro Piezoresistive Shear-Stress Sensor, the primary sensing component, is formed by chemical etching solutions or physical etching techniques.
- 5. A Contact-type Micro Piezoresistive Shear-Stress Sensor according claim 1, Formation of the Flange structure includes immersion in BOE at a concentration of HF:H₂O=1:10, and semi-conductor preparation process of pattern etching (size and shape).